Environmental Water Program
Conceptual Proposal
Guidance Document

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SECTION 1. INTRODUCTION

Purpose of This Guide

The U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA) Fisheries, and the California Department of Fish and Game (DFG) are designated as the implementing agencies for the Ecosystem Restoration Program (ERP Implementing Agencies). The ERP Implementing Agencies, in coordination with the California Bay-Delta Authority (CBDA), are working with local stakeholders to implement pilot water acquisitions in selected watersheds through the Environmental Water Program (EWP).

The EWP will be working in partnership with local interests to identify potential water acquisitions. The process for identifying willing sellers and designing and monitoring water acquisitions will be undertaken by teams including local stakeholders, local agency representatives, a science team, and other agency representatives. This will ensure that all acquisitions are locally sponsored and locally acceptable. All interested parties are welcome to participate on these teams.

These teams will prepare conceptual proposals that describe the proposed acquisition and associated experiment. The purpose of this document is to provide guidance to all participants regarding the format and content requirements for the conceptual proposals. Interested parties are encouraged to contact Campbell Ingram of the USFWS at (916) 414-6727 for more information or for assistance.

Background information regarding the CBDA and the Environmental Water Program are provided in Appendix A.

Guiding Principals

Implementation of the EWP will be guided by several principles intended to provide a fair, locally acceptable, and scientifically sound program. Section 4 of this Guide lists all of these principles. The following three principles are of primary importance in the implementation of the EWP. All acquisitions will be:

- made on a willing seller basis;
- developed jointly by local interests and the ERP Implementing Agencies; and
- designed to test hypotheses regarding water management in a manner that
    - facilitates learning through adaptive management,

- includes appropriate monitoring, and
- will be peer reviewed by an independent scientific panel prior to approval.

Goals of the EWP

The goal of the EWP is to acquire water in support of the ERPP to:

- enhance instream flows that are biologically and ecologically significant,
- improve the state of scientific knowledge related to the effects of instream flows, and
- gain knowledge regarding the institutional and social constraints facing environmental water acquisitions.

Initial Implementation of the EWP

The EWP will be implemented within an adaptive management framework. Adaptive management acknowledges that there is uncertainty related to how an ecosystem functions and what strategies and actions will be most effective in improving conditions for target species. It is based on the need to implement actions to restore ecological health in a manner that increases our understanding of the system over time by constantly monitoring ecological systems and changing actions in response to this increased understanding.

The adaptive management framework contained in the Strategic Plan for Ecosystem Restoration (CALFED 2000) identifies three levels of implementation for restoration actions. Where little information is available about how a system works, targeted research is most appropriate. Where little uncertainty exists regarding the potential benefits of a restoration action, full-scale implementation is most appropriate. Where there is some uncertainty, but credible hypotheses exist, implementation through pilot projects is recommended. More information regarding science and adaptive management requirements is provided in Section 5 below.

A high level of uncertainty exists regarding how the EWP should be implemented—specifically, how much water should be acquired on which streams, what benefits can be expected from enhancing instream flows, and how those benefits can be measured. In addition, during the Steering Committee process, a large number of uncertainties related to the institutional aspects of acquiring water were identified. Given the level of uncertainty associated with the benefits of increased instream flows, the institutional uncertainties that exist regarding how to implement the program, and the cost of acquiring water, full-scale implementation is not yet appropriate for the EWP. However, the availability of some credible hypotheses regarding the benefits of enhanced

flows make implementation of the EWP through pilot projects the most appropriate approach.

Therefore, implementation of the EWP will be carried out as a series of pilot water acquisitions on high priority (first tier) streams within an adaptive management framework. These acquisitions will be undertaken to achieve four objectives (derived through the Steering Committee process described in Appendix A):

- acquire water on one to three priority streams;
- design and apply a science-based adaptive approach to all three acquisitions to increase understanding of how the system works;
- improve conditions for target fish species or reinvigorate flow-related ecosystem functions; and
- achieve, where possible, multiple environmental benefits from each acquisition.

Setting Stream Priorities

Prior to the issuance of this guidance document, the EWP established priorities for the first round of acquisitions. These priorities were developed following a process that involved considerable public review and input.

U.S. Fish and Wildlife Service Biological Prioritization Process

Subsection 3406 (b)(3) of the Central Valley Project Improvement Act (CVPIA) directs the Department of Interior, through USFWS and the U.S. Bureau of Reclamation (USBR), to develop and implement a program to enhance instream flows with the purpose of benefiting native and important fisheries. To this end, Interior created the CVPIA Water Acquisition Program (CVPIA WAP), jointly managed by USFWS and USBR to acquire water for environmental purposes. In 1996, USFWS published *Draft Guidelines for Allocation of Water Acquired Pursuant to Section 3406(b)(3) of the CVPIA* (USFWS 1996) in which flow recommendations were presented for Central Valley streams, divided into blocks of water in priority order. This document was based on an analysis of water needs using the physical habitat simulation model, which is the major component of the Instream Flow Incremental Methodology (IFIM). While this document prioritized water needs for each stream, it did not present priorities among streams. In 2000 and 2001, USFWS held a series of four workshops intended to assist in establishing priorities for Central Valley streams based on biological benefits. USFWS published a Draft Technical Memorandum on August 22, 2001 (CH2M Hill 2001) that summarized the results of the workshops and presented draft stream rankings for 19 tributaries to the Sacramento and San Joaquin Rivers. These workshops included a wide

variety of agency, stakeholder, and consultant fisheries experts, who collaboratively developed the methodology used to rank the streams.

Preliminary EWP Recommendations

The ERP Implementing Agencies and their staff and consultants began with the 12 highest-ranked streams from the USFWS biological priorities. Working with the EWP Steering Committee, the agencies developed a set of screening criteria to further categorize the 12 streams based on:

- the biological priorities assigned by the USFWS,
- which streams were recommended for instream acquisitions during Stage 1 in the ERPP Strategic Plan for Ecosystem Restoration,
- how much money had been invested in each stream by CALFED and CVPIA (as a surrogate for the ecological importance of each stream),
- the number of anadromous fish species present in the stream that were identified for recovery in the CALFED Multi-Species Conservation Strategy,
- whether quantified flow objectives had been identified for the stream,
- whether historical biological monitoring data were available for the stream, and
- whether local watershed management groups were active in the watershed (to act as local partners).

Using these criteria, the 12 streams were prioritized into three tiers, with the first tier having the highest priority. (Note: there is no prioritization within tiers.) The criteria used and how they were applied are documented in a report entitled "EWP Pilot Water Acquisitions—Stream Selection Recommendations (Jones & Stokes 2002). The EWP will focus its initial efforts in identifying water to acquire on the First Tier streams. If opportunities do not exist on enough of the First Tier streams, the Program may evaluate Second Tier streams for possible acquisitions. The stream priorities are:

First Tier

- Butte Creek
- Clear Creek
- Deer Creek

- Mill Creek
- Tuolumne River

Second Tier

- Battle Creek
- Big Chico Creek
- Calaveras River
- Stanislaus River
- Yuba River

Third Tier

- Antelope Creek
- Cow Creek

Geomorphological Priorities

The EWP stream priority recommendations were presented to the EWP Steering Committee and then to the ASET for review and comment. ASET members commented that the criteria used had not fully represented scientific considerations, such as the relative opportunities presented by each stream to yield important information and how well each stream lends itself to scientific inquiry. Based on these comments, the ERP Implementing Agencies hired a consultant to review the current state of knowledge regarding the relationship between flow and geomorphologic processes and to recommend streams where geomorphic experiments would have the most potential to yield new information.

The results of this review are summarized in a report entitled "Environmental Water Program: Restoring Ecosystem Processes through Geomorphic High Flow Prescriptions" (Stillwater Sciences 2003). The recommendations of this geomorphic report are not intended to supplant the priorities established earlier by the EWP but to be in addition to them. In other words, the EWP is interested in acquiring water for experiments related to the direct biological benefits of flow (passage, migration, and habitat improvements) and experiments related to reactivating geomorphic processes through high flow events. Chapter 4 of this report suggests that three streams have the best potential for geomorphic experiments based on the availability of monitoring data:

- Butte Creek,

- Clear Creek, and
- the Tuolumne River.

These streams are all within the first tier of the EWP prioritization.

Coordination with Other Water Acquisition Programs

The Environmental Water Program was formed to acquire water from willing sellers for environmental purposes; however, it is not the only active water acquisition program. Other government-operated environmental water acquisition and management programs exist, most notably the Environmental Water Account (EWA), CVPIA Dedicated Yield Program ([b][2]), CVPIA WAP ([b][3])and the California Department of Water Resources (DWR) Dry Year Water Purchase Program. The goals of some of these programs overlap with the fundamental purpose of the EWP: to purchase water from willing sellers to benefit the environment. Accordingly, coordination with these programs during implementation of the EWP is essential. Staff members of each of these three programs are working to develop plans for coordinating the programs. Additionally, several nonprofit, non-governmental organizations are developing, or are implementing, environmental water acquisition programs. The Environmental Water Program will strive to coordinate with these programs as appropriate. More discussion of this coordination is provided below in Section 2, "Overview of the Process," and in a briefing paper entitled "Coordination between the Environmental Water Program and Related Programs."

SECTION 2. OVERVIEW OF THE PROCESS

The ERP Implementing Agencies recognize that a successful water acquisition program must be locally acceptable. Therefore, they have established a process to acquire water from willing sellers that involves a cooperative effort by agencies, scientists, and local interests. This process, described in detail below and portrayed graphically in Figures 1–4, involves several steps: preparing and reviewing conceptual proposals, preparing and reviewing full proposals, negotiating acquisitions, conducting experiments and monitoring, evaluating results, and publishing peer-reviewed results. This document is intended to provide guidance regarding the initial step in the process, preparing a conceptual proposal.

As a first step, the EWP agencies formed an EWP Core Team composed of representatives from interested agencies to oversee implementation of the EWP (Figure 5). The EWP Core Team will work with agency representatives, watershed groups, and other local interests to form a local proposal preparation team for each of the selected streams. Anyone with an interest in water acquisitions or stream flow experiments will

Draft EWP Proposal Process

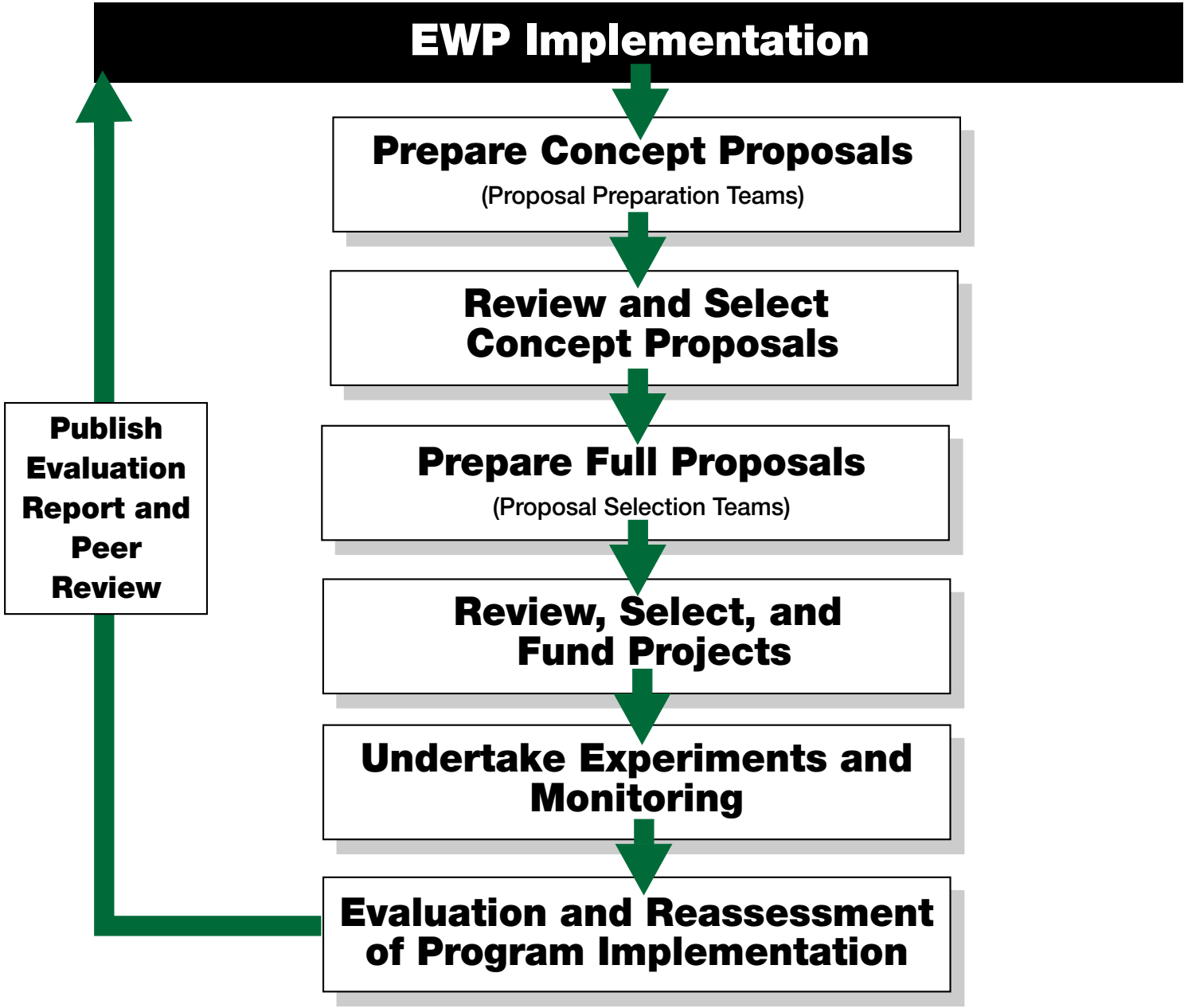

Figure 1

Review and Select Concept Proposals

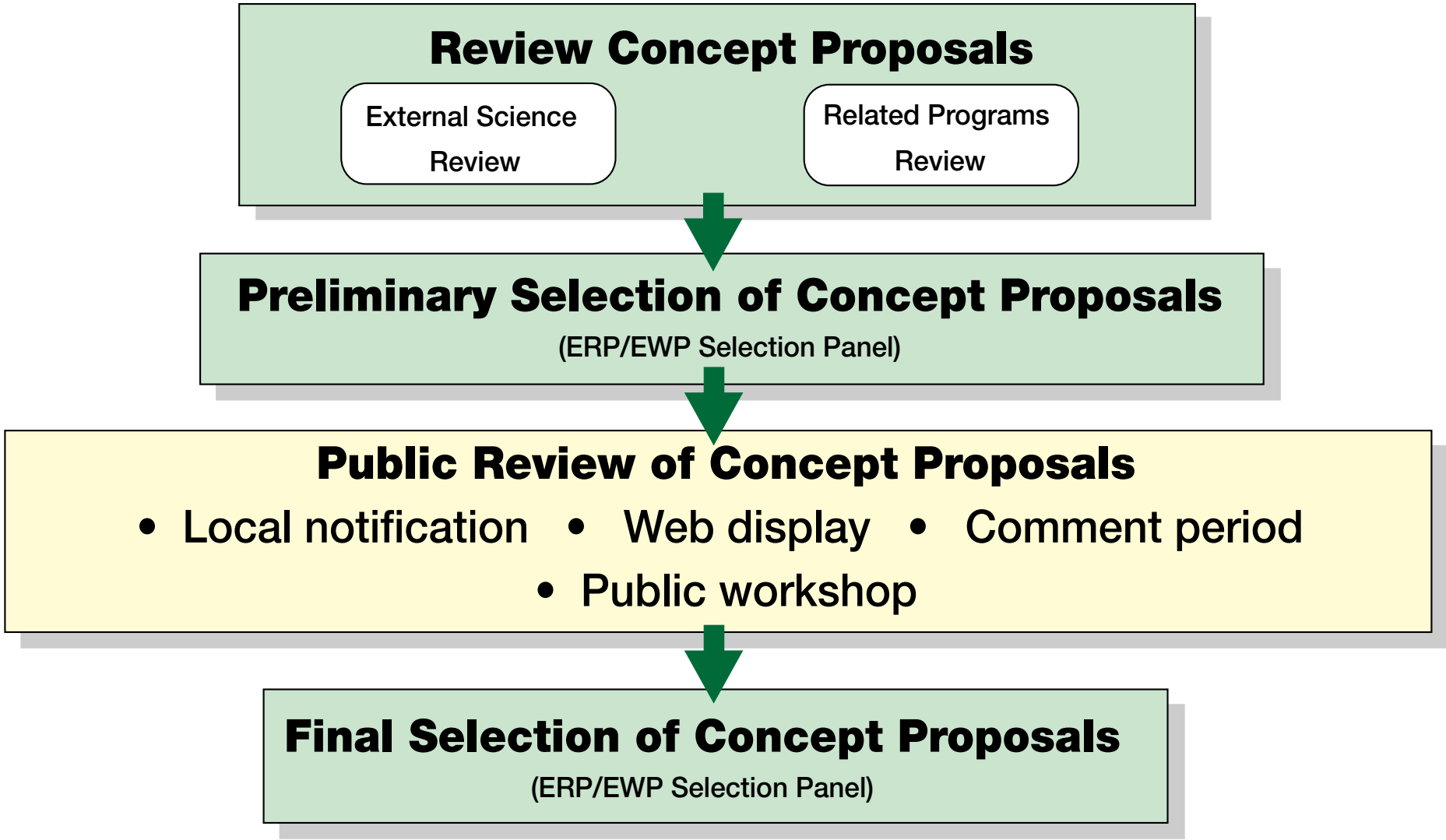

Figure 2

Prepare Full Proposals

Figure 3

Review, Select, and Fund Projects

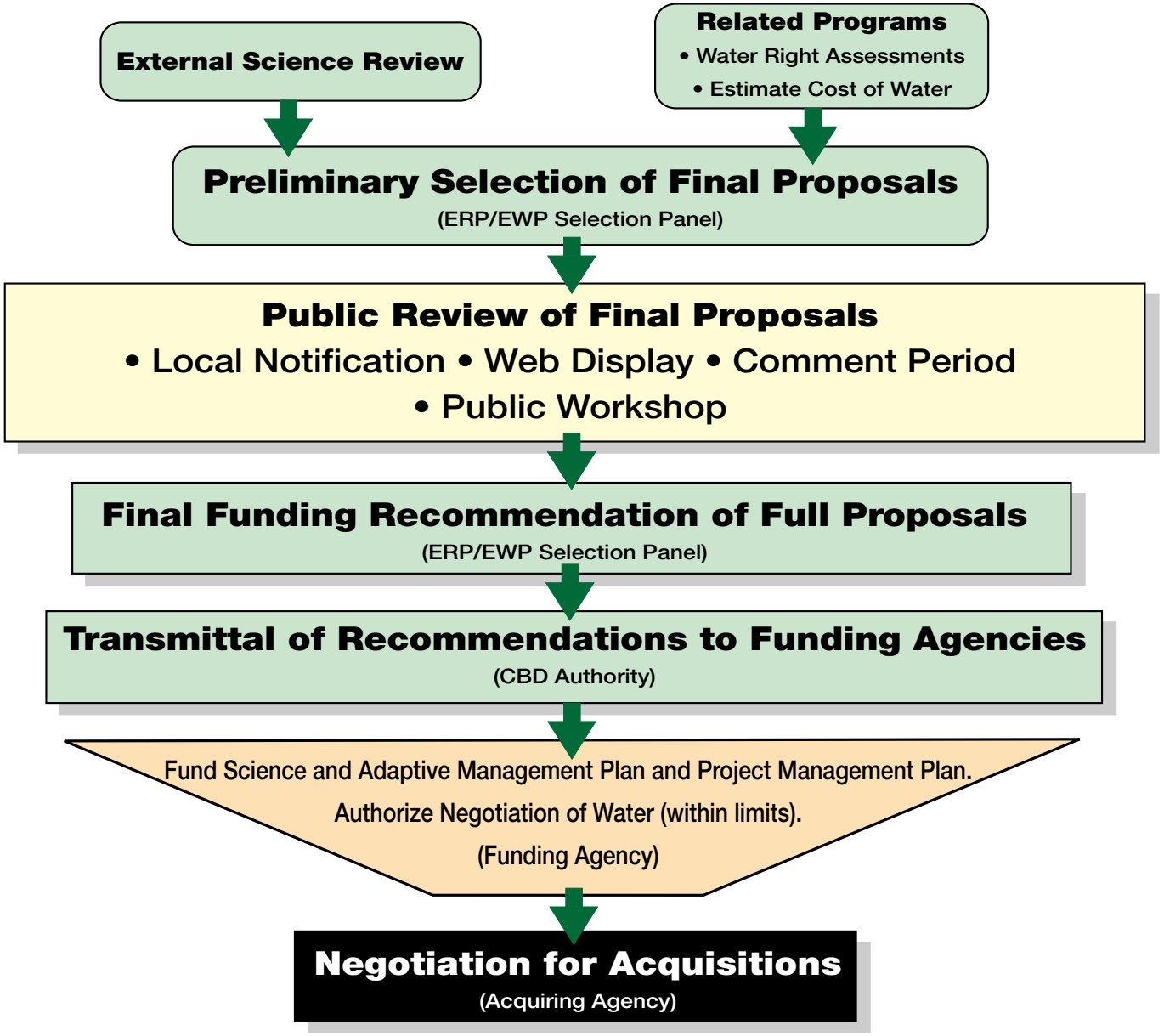

Figure 4

Organization of the EWP

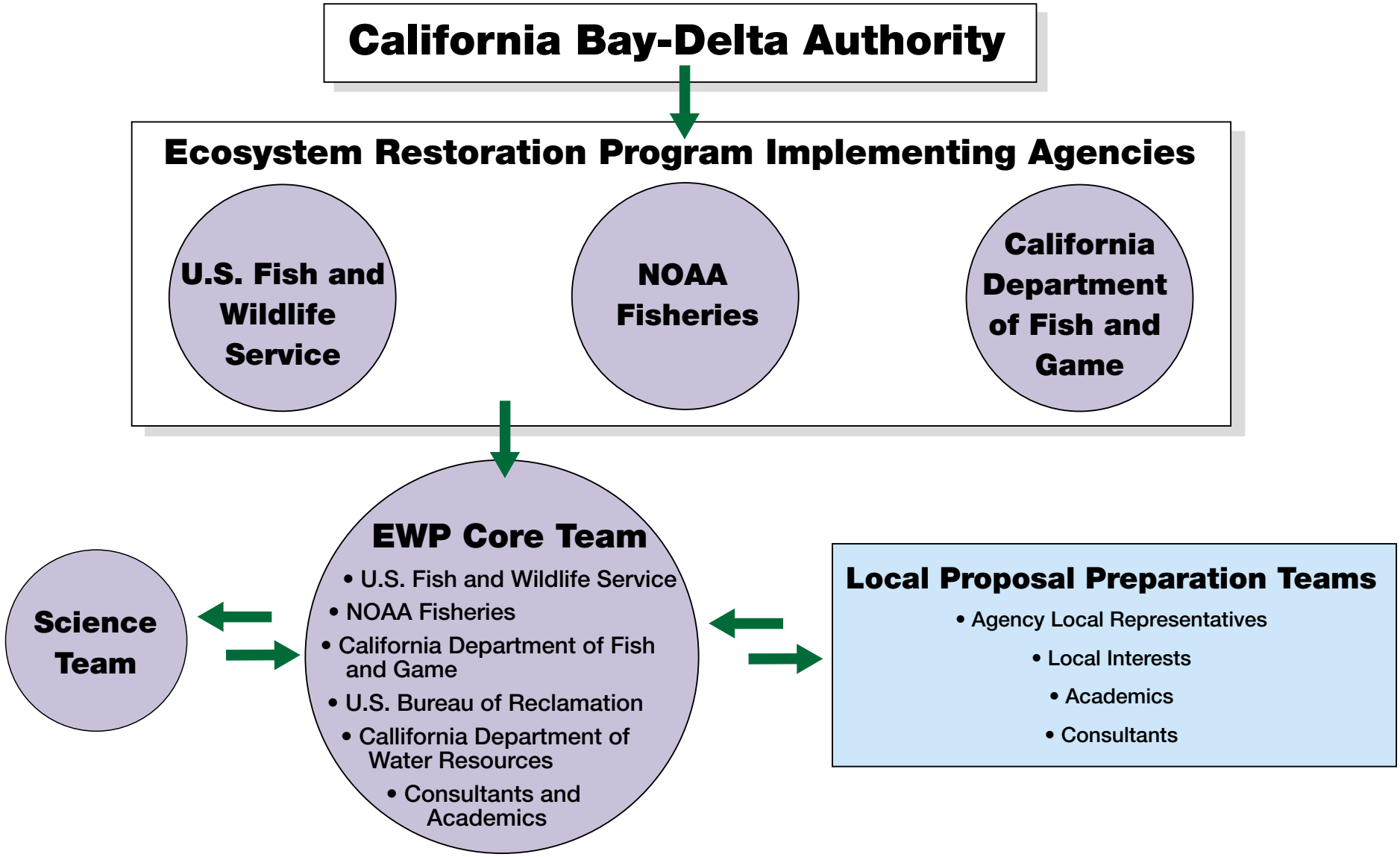

Figure 5

be welcome to participate on the proposal preparation team. The ERP Implementing Agencies also have hired a lead scientist who will oversee all of the scientific aspects of proposal preparation, experimental design, conducting the experiments, and analyzing the results. The lead scientist is responsible for hiring scientific staff to support this effort.

The details of the proposed acquisitions are to be developed through a collaborative effort of the EWP Core Team, the Science Team, and local interests. These details include the amount, timing, duration, and location of the water to be acquired; the number of years water would be acquired; the specific ecological goals and objectives to be addressed; the scientific basis for the acquisition; and the sources of water.

As described above, the ERP Implementing Agencies have selected five watersheds in which to focus the initial round of acquisitions under the EWP: Butte Creek, Clear Creek, Deer Creek, Mill Creek, and the Tuolumne River.

Preparation and Review of Conceptual Proposals

Preparation of Conceptual Proposals

The first task for these local proposal preparation teams, after getting organized, is to work with the EWP Core Team and Science Team to prepare conceptual proposals for science-based water acquisitions. More than one conceptual proposal may be prepared for each priority watershed. The form and content requirements for conceptual proposals are discussed in Sections 5, 6, and 7 of this Guide. The ideas regarding the scientific questions to be addressed and the specifics of water to be acquired should originate from the proposal preparation teams.

Review of Conceptual Proposals

Once completed, the conceptual proposals will be reviewed by an independent science panel that will review the scientific basis of each conceptual proposal, including the conceptual models, testable hypotheses, and conceptual monitoring programs.

All conceptual proposals will be reviewed by representatives from related water acquisition programs to determine whether any potential synergies or conflicts exist between the conceptual proposals and these related programs. These related programs include but are not limited to the CVPIA Dedicated Yield Program and WAP, the EWA, and the DWR Dry Year Program. This related-programs review will also bring a first-cut hydrologic review of the proposed acquisition to ensure that the acquisition would not harm the water rights of the Central Valley Project (CVP), State Water Project (SWP), or other water users.

The review of conceptual proposals will answer the following questions:

- Is there a conceptual model to support the proposed action?
- Are the key assumptions explained?
- Are the hypotheses to be tested clearly stated?
- Is the conceptual experimental design component appropriate?
- Will the conceptual monitoring program answer the questions posed by the hypotheses?
- Is the project feasible?
- Does the project have sufficient local support, or is there opposition?
- Does the sale of water have the potential to adversely affect the rights of others, including the SWP and the CVP?
- Are there opportunities for the acquired water to achieve multiple environmental benefits through partnerships with other acquisition programs?

Following these reviews, an ERP/EWP Selection Panel will be convened to make recommendations regarding which conceptual proposals merit preparation of a full proposal. The ERP/EWP Selection Panel will be composed of technical and resource-management experts with experience related to water acquisitions, fisheries, riverine ecosystems, and geomorphology. CBDA will determine panel membership and consider nominations from the Independent Science Board (ISB) and ASET.

The ERP/EWP Selection Panel will provide a check on earlier reviews, but their primary purpose in this step is to make strategic recommendations regarding which conceptual proposals are ready to have full proposals prepared. From their own review as well as the previous reviews, the panel will summarize any recommendations to the proposal preparation teams.

In adhering to CBDA's commitment to a public process, the recommendations of the ERP/EWP Selection Panel will be presented to the general public during a public comment period. Because these proposals ultimately will involve negotiations with willing sellers over cost, details of the water acquisition will not be disclosed at that time. Public disclosure will focus on the scientific aspects of each proposed acquisition.

Preparation and Review of Full Proposals

Preparation of Full Proposals

The EWP Core Team will work with the Science Team and Local Proposal Preparation Teams to develop full proposals for those conceptual proposals selected, and to implement the recommendations made by the reviewers. Full proposals should contain very detailed descriptions of the work to be completed, who will be responsible for completing each element of work, and costs for each element of work. Further, full proposals will contain three major components—a science and adaptive management plan, a project management plan, and a proposed transaction. Section 7 of this Guide provides more information about the form and content requirements for preparing a full proposal.

Review of Full Proposals

The process for reviewing full proposals will be similar to that used in reviewing conceptual proposals, with the following exceptions:

- the reviews will be more detailed; and
- decisions for funding proposed acquisitions will result.

An independent science panel will review the Science and Adaptive Management Plan, including the detailed information concerning hypotheses to be tested, monitoring plan, data evaluation plans, and cost estimate. The questions to be answered through this review include:

- Is there a conceptual model to support the proposed action?
- Are the key assumptions explained?
- Are the hypotheses to be tested clearly stated?
- Is the experimental design component sound?
- Does the proposal describe performance measures and metrics?
- Has the monitoring program been set up properly to answer the questions posed by the hypotheses?
- Is the team created to conduct the monitoring qualified to complete the work?

- Is the amount of money requested in the Science and Adaptive Management Plan appropriate for the work described?

The Project Management Plan will be reviewed to answer the following questions:

- Are appropriate systems being proposed to allow the grant recipient to effectively manage the proposed scope of work, subcontractors, and control costs?

- Is the project feasible?

- Does the project have sufficient local support, or is there opposition?

- Has a reasonable environmental compliance strategy been proposed?

- Is the amount of money requested in the Project Management Plan appropriate for the work described?

The proposed transaction will also be reviewed by staff representing other water acquisition programs, including the EWA, CVPIA WAP, the DWR Dry Year Program, and others. This will include water rights specialists from DWR and USBR. This review is intended to answer the following questions.

- Is the water being proposed for acquisition water that the sellers have the right to sell?

- Does the seller's water right correspond to the timing when the water needs to be made available according to the Science and Adaptive Management Plan?

- If the water is being made available through crop idling, has the amount of water available for sale been properly calculated?

- If the water is being made available through sale of water from storage, have appropriate refill criteria been included?

- Would the sale of water adversely affect the rights of others, including the SWP and the CVP?

- Are there opportunities for the acquired water to achieve multiple environmental benefits through partnerships with other acquisition programs?

- Has adequate provision been made for protecting the acquired water along the entire length of stream in which it is needed?

- Is the estimated cost of water within an appropriate range?

The ERP/EWP Selection Panel will provide a check on earlier reviews, but their primary purpose is to make funding recommendations based on the following criteria:

- scientific validity and importance,
- consistency with EWP guiding principles, and
- whether the proposed transaction is complementary to other restoration activities in the area.

As with the conceptual proposals, the recommendations of the ERP/EWP Selection Panel will be presented to the general public during a public comment period. Because these proposals ultimately will involve negotiations with willing sellers over cost, details of the water acquisition will not be disclosed at that time. Public disclosure will focus on the scientific aspects of each proposed acquisition.

Proposals recommended for funding by the ERP/EWP Selection Panel will be reviewed by the CBDA, which will transmit recommendations to the funding agency. The funding agency will authorize funding for the Science and Adaptive Management Plan and the Project Management Plan. In addition, the funding agency will authorize the acquiring agency (if different) to negotiate with the selling party for the acquisition of water.

Conduct Experiments, Evaluate Results, Publish Results

Project proponents, in cooperation with the EWP Core Team and the Science Team, will undertake the experiments described in the full proposals, including the monitoring program. Evaluation of the pilot water acquisitions will involve two elements: evaluation of the selection process, and evaluation of the experimental results. While environmental benefits may not be realized for months or years following initial implementation, the ERP Implementing Agencies will begin immediately to assess the effectiveness and efficiency of the process used to select the first round of pilot acquisitions. This evaluation will be used to modify and improve future rounds of acquisitions.

All experiment results will be subjected to peer review prior to publication to ensure that the results are appropriately interpreted. This peer review will also facilitate incorporation of any new information into future implementation of the ERP as a whole, and the EWP in particular.

SECTION 3. EWP PILOT WATER ACQUISITION PREFERENCES

This section provides information regarding acquisitions of the greatest interest to the EWP. The ERP Implementing Agencies provide the following information to guide potential acquisitions regarding the sources of water to be acquired by the EWP. This information is consistent with guidance provided by DWR regarding acquisitions for the EWA and the DWR Dry Year Program.

Preferred Water Transfer Types

Potential Sources

The following sources of water are of greatest interest to the EWP for the first year of pilot projects:

- **Stored water.** Reoperation of a reservoir or release of water that would remain in storage or would be stored in the absence of the water transfer.

- **Groundwater substitution**. Reduction in surface water use that is offset with additional groundwater pumping.

- **Crop idling/crop shifting.** Reduction in surface water use resulting from a reduction in the evapotranspiration of applied water to agricultural crops that would have occurred in the absence of the water transfer.

- **Other Methods.** Other methods of making water available to the EWP that do not create third party impacts.

Types of Water Transfer of No Interest to the Environmental Water Program

The EWP is not interested in pursing the following water transfers:

- **Transfers that injure legal users of water or cause unreasonable effects to the environment**. Water transfers that simply reclassify existing stream flows from one category to another, making these flows no longer available to historical downstream users, have the potential to injure other legal users of water and cause harm to the environment. Water transfers should focus on either making new surface flows available or reducing surface water use in such a way as to expand the availability of surface water resources for use by others.

- **Direct pumping of groundwater**. Water Code Section 1220 establishes significant barriers to the export of groundwater outside the Sacramento Valley. CBDA is not interested in facilitating the direct transfer of groundwater from one area to another for purposes of the EWP.

SECTION 4. GUIDING PRINCIPLES

EWP acquisitions will be guided by two sets of principles. The first set, Overarching Principles, establishes the broad rules by which acquisitions will be undertaken, in order to adhere to the CALFED Solution Principles, to facilitate the local acceptance of the program, and to ensure fairness and equity in the process. The second set, Legal Principles, ensures that the program will adhere to the provisions of the California Water Code.

Overarching Principles

- Water acquisitions are voluntary transactions, based on willing sellers and willing buyers.

- Water acquisitions will be accomplished through partnerships between the ERP Implementing Agencies and local and regional stakeholders.

- Water acquisitions will be designed to test hypotheses regarding water management in a manner that facilitates learning through adaptive management, includes appropriate monitoring, and will be peer reviewed by an independent scientific panel prior to approval.

- Water acquisitions will consider social and local economic conditions.

- Water acquisitions will be coordinated with other state and federal water acquisition programs.

- Water acquisitions will adhere to CALFED agencies' commitment to environmental justice.

Legal Principles

California law contains numerous protections that apply to water transfers. However, there are three fundamental principles that typically apply:

1. no injury to other legal users of water,

2. no unreasonable effects to fish, wildlife, or other instream beneficial uses of water, and

3. no unreasonable effects on the overall economy or the environment in the counties from which the water is transferred.

The ERP Implementing Agencies will not support or participate in any water transfer where these basic principles have not been adequately addressed.

The following are suggested methods to develop workable water transfers within these guidelines:

1. No injury to other legal users of water
   a. Determine the water available for acquisition based on the conditions that would exist absent the water acquisition or the program that makes the acquisition water available.
   b. Include real-time monitoring programs as a part of the water acquisition to trigger corrective actions that help avoid possible impacts as they may develop. This is especially important for groundwater substitution acquisitions.
   c. Include a mitigation program that specifies the actions that will be taken as quickly as may be necessary to prevent injury from occurring.
   d. Include reservoir "refill criteria" for storage water acquisitions as appropriate to protect downstream users from delayed impacts of the water acquisition. Refill criteria are developed on a site-specific basis and may be different for water acquisitions with places of use within, as opposed to those outside, the Sacramento Valley.

2. No unreasonable effects on fish and wildlife
   a. Coordinate with State and federal fishery agencies to help make water available in the most "fish friendly" method possible, to help avoid

adverse effects on fish and wildlife attributable to the water acquisition, and when possible to enhance fish habitat.
   b. Disperse any cropping land use changes and avoid actions that affect critical habitat of sensitive fish and wildlife species.
   c. Include monitoring programs as may be needed to implement adaptive management efforts to mitigate potential impacts on fish and wildlife.
   d. Adhere to established operational limits in existing permits and licenses.

3. No unreasonable effects on the overall economy in the counties from which the water is acquired
   a. Limit the scope and extent of actions that can affect the local economy.
   b. Recognize that investment of local income from water acquisitions typically goes back into normal business operations and improvements of local water supply systems.
   c. Work with the seller, and, as necessary, county government representatives to help identify actions that may become necessary if the cumulative economic effects of water acquisitions in those counties appear to the ERP Implementing Agencies to reach unreasonable levels.

SECTION 5. SCIENCE AND ADAPTIVE MANAGEMENT

Role of Science and Adaptive Management in Water Acquisitions

The ERP Implementing Agencies are committed to implementing restoration actions in an adaptive management context. Within an adaptive management framework, natural systems are managed to ensure their recovery and/or improvement, while increasing the understanding of how they function. In this manner, future management actions can be revised or refined in light of information generated from previous restoration and management actions. In this respect, adaptive management treats all restoration actions as experiments.

The EWP pilot acquisitions will all be conducted as experiments where hypotheses about the benefits of the increased flows are developed and tested. This will ensure that each acquisition not only results in more instream flows, but also that each generates information that will add to our understanding of the role of flow in riverine ecosystems. All proposed acquisitions will be evaluated based on their ability to generate information about key uncertainties related to flow.

The EWP Core Team will work with local resource managers, stakeholders, and the Science Team to capture their understanding about how their particular stream

functions, how it has been altered or degraded, and how various actions might improve conditions in the system. Through this process conceptual models for each of the five target streams should emerge that can help to highlight key uncertainties where research might be necessary and/or lead to potential flow-related actions.

Resources Available to Aid in Applying Science and Adaptive Management

The Proposal Preparation Teams should use the following five documents to assist in developing the experimental framework and details of each proposal. These documents will provide the information necessary to develop proposals with the scientific framework needed for a proposal to be funded, including developing appropriate conceptual models, testable hypotheses and adaptive management and monitoring programs. The five documents are: the *Ecosystem Restoration Program Strategic Plan for Ecosystem Restoration* (July 2000); the *Ecosystem Restoration Program Draft Stage 1 Implementation Plan* (August 2001); the *EWP Pilot Water Acquisitions—Stream Selection Recommendations* (January 2002); "Draft Summary Report, CALFED Adaptive Management Workshop—Flow Manipulation" (Kimmerer et. al 2002); and the *Environmental Water Program: Restoring Ecosystem Processes through Geomorphic High Flow Prescriptions* (November 2002).

The *Ecosystem Restoration Program Strategic Plan for Ecosystem Restoration*, July 2000, provides broad guidance for restoration of the Bay-Delta ecosystem. It establishes adaptive management as the primary tool for achieving ERP objectives, describes opportunities and constraints, and provides broad goals and specific objectives for flow-related actions. Additionally, the document provides guidance on defining problems, defining goals and objectives, developing conceptual models, defining restoration actions, and monitoring restoration actions. Appendix C of the document provides an example of adaptive management using conceptual models for chinook salmon and Deer Creek.

The *Ecosystem Restoration Program Draft Stage 1 Implementation Plan*, August 2001, is the second iteration of an implementation plan for the ERP and presents the information-gathering and restoration priorities for the 2002 Proposal Solicitation Package. The ERP strategic goals for natural flow regimes are discussed in detail in the document. Additionally, Section 2, "Designing Ecosystem Restoration Projects Using an Adaptive Management Approach," provides guidance on science-based adaptive management approach, developing conceptual models, and defining restoration actions.

The *EWP Pilot Water Acquisitions—Stream Selection Recommendations* (January 2002) presents a final recommendation of five streams for the first round of acquisitions. The document analyzes 12 streams identified by the USFWS as having the highest priority for instream acquisitions, provides a full ranking of all 12 streams in three tiers, and presents the process used to make the selections.

In March 2002, the ERP ISB convened a workshop to discuss implementing full-scale adaptive management experiments within the CALFED solution area. One of the topic areas addressed was flow-manipulation experiments. The deliberations and conclusions of this workshop are presented in "Draft Summary Report, CALFED Adaptive Management Workshop—Flow Manipulation" (Kimmerer et. al 2002).

The report *Environmental Water Program: Restoring Ecosystem Processes through Geomorphic High Flow Prescriptions*, November 2002, provides a framework to identify flows needed to maintain or restore ecological functions and assist with the water acquisition aspects of the 2002 Draft Stage 1 Implementation Plan. The document describes methods for prescribing high streamflows to achieve desired geomorphic functions and objectives. Ecosystem objectives that can be used as testable hypotheses are presented for flows ranging from lower depth-maintaining flows that provide suitable combinations of velocity, depth, and temperature at particular times, to high magnitude floodplain-maintaining flows resulting in channel avulsion and migration. The document also supports prioritization of Clear Creek, Butte Creek, and the Tuolumne River as the streams that have the highest potential for successful geomorphic adaptive management experiments. It also provides example (draft) scientific hypotheses based on the Tuolumne River.

SECTION 6. PREPARING A CONCEPTUAL PROPOSAL

Proposals should be developed using the following format.

A. Project Description

1. Statement of problem—Describe the flow-related problem or scientific uncertainty that the acquisition is designed to address, including a brief narrative of the project location. Clearly state the goals and objectives of the proposed study. Provide a review of relevant past studies of and solutions (if any) to the problem, here and elsewhere.

2. Conceptual model and testable hypotheses—Include a clearly articulated conceptual model that describes the causal interconnections between increased flow and other key ecosystem components and explain the underlying basis for the proposed work. The model should be based on the best information available and should demonstrate how physical and biotic system components are expected to respond to anticipated flow alterations. Models can be presented graphically or as a narrative and should list the source(s) of available information. Clearly identify the testable hypotheses associated with the proposed project and how the project is designed to test those hypotheses. Identify the key uncertainties to be addressed and explain how the proposed work will reduce uncertainty. Describe alternative non-flow restoration efforts, if any, that might effectively address the stated problem.

3. Approach—Provide conceptual study design. Describe the timing, duration, magnitude, and frequency of proposed flows and, in general terms, the methods to be used to gather data and evaluate the effects of these flows. Clearly identify how the approach maximizes the information richness and value to decision-makers.

4. Feasibility—Demonstrate that the described approach is both feasible and appropriate to the proposed work. Describe the potential availability of water to conduct the experiment. Describe any operational considerations or constraints within the watershed that may affect the ability to conduct the experiment. List what permits or agreements are necessary to proceed with the tasks described.

5. Work schedule—Describe the project timeline, including the duration of the experiment and the time needed to acquire, process, and evaluate the data.

B. Regional Context

1. Relationship to other ecosystem restoration projects—Explain the relationship to past and future projects. Explain how this project relates to other previously funded projects including CALFED Program, CVPIA, and other ecosystem restoration activities.

2. Systemwide ecosystem benefits—Identify any synergistic, systemwide ecosystem benefits that may result from the proposed project. Describe how the proposal complements projects or programs in other areas or within the watershed. Examples of proposals with synergistic, systemwide ecosystem benefits might include a fish passage project that opened up habitat in the upper watershed of a stream and a second proposal to acquire water to further enhance passage or habitat for these fish.

C. Qualifications

Provide brief biographical sketches of the principal participants that identify qualifications (education, relevant experience) and contributions (completed projects, published reports on the same topic, etc.) consistent with their roles and responsibilities in the proposed project. In particular, proposals must indicate who will conduct the scientific portions of the project (e.g., development of hypotheses, monitoring, evaluation). Describe the planned organization of staff and other resources to be used in implementing this project. Identify the nature and extent of other collaborating participants in the implementation of this project. Identify specific individual responsibilities covering technical, administrative, and project management roles.

D. Cost

To the extent possible, indicate the magnitude of costs involved in conducting the experiment (include monitoring and evaluation), managing the project, and acquiring the water.

E. Literature Cited

All proposals must include references to related research studies, project reports, scientific reports, and other supporting information cited in the proposal.

SECTION: 7. FULL PROPOSAL PREPARATION

Following selection of conceptual proposals by the ERP/EWP Selection Panel, the EWP Core Team, Science Team, and Proposal Preparation Teams will undertake preparation of full proposals. It is anticipated that these proposals will contain detailed information regarding three components of the proposed project: an adaptive management and monitoring plan, a project management plan, and a proposed water acquisition.

The adaptive management plan will include:

- a detailed experimental design, including testable hypotheses, a monitoring plan, a data evaluation plan, and the costs associated with these efforts.

The project management plan will describe:

- how the work will be managed and by whom,
- the roles and qualifications of all key staff members, a schedule for completion of all work,
- a regulatory compliance plan, and
- the cost associated with these tasks.

The proposed water acquisition will describe:

- the timing, duration, magnitude, and frequency of flows required to conduct the experiment;
- an assessment of the availability of water to be acquired;

- documentation of the water right(s) underlying the proposed water sale;
- an estimate of cost to acquire the water; and
- a plan for protecting the water from being diverted by other users.

A GUIDANCE DOCUMENT PROVIDING DETAILED REQUIREMENTS FOR THE PREPARATION OF A FULL PROPOSAL WILL BE PROVIDED AT A LATER DATE.

Appendix A. Background on the California Bay-Delta Authority and the Environmental Water Program.

THE CALIFORNIA BAY-DELTA AUTHORITY

CALFED Bay-Delta Program (CALFED) is a cooperative effort of more than 20 State and federal agencies with management and regulatory responsibilities for the San Francisco Bay/Sacramento–San Joaquin Delta (Bay-Delta). This cooperative effort resulted in a long-term, comprehensive plan (Plan) to restore ecological health and improve water management for beneficial uses of the Bay-Delta system. The Plan has four objectives:

- **Ecosystem Quality.** Improve and increase aquatic and terrestrial habitats and improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species.
- **Water Supply.** Reduce the mismatch between Bay-Delta water supplies and current and projected beneficial uses dependent on the Bay-Delta system.
- **Water Quality.** Provide good water quality for all beneficial uses.
- **Levee System Integrity.** Reduce the risk to land use and associated economic activities, water supply, infrastructure, and the ecosystem from catastrophic failure of Delta levees.

CALFED released a Draft Programmatic Environmental Impact Statement/ Environmental Impact Report (EIS/EIR) in June 1999 that analyzed the environmental impacts of the Plan and several alternatives. Following a lengthy public comment period, the CALFED Program released a Final Programmatic EIS/EIR in July 2000. In August 2000, a Programmatic ROD was issued for the CALFED Program, reflecting the final selection of the long-term Plan for the Bay-Delta. Implementation of the Plan is expected to occur over a 30-year period. Stage 1 of implementation covers the first 7 years of this 30-year effort and builds the foundation for long-term actions.

The California Bay-Delta Authority (CBDA) is an agency of the State of California created by the California Legislature to oversee the State's participation in implementing the Plan. The Ecosystem Restoration Program Plan (ERPP) is an element of the overall Plan. The goal of the ERPP is to improve and increase aquatic and terrestrial habitats and to improve ecological functions in the Bay-Delta to support sustainable populations of diverse and valuable plant and animal species. One of the commitments of the ERPP, as defined in the ROD, is to "improve salmon spawning and juvenile survival in upstream tributaries as defined by the ERPP and Strategic Plan, by purchasing up to 100,000 acre-feet (AF) per year by the end of Stage 1." Similarly, the Plan calls for pursuing "full implementation of ERP upstream flow targets through voluntary purchases of at least 100,000 AF by the end of Stage 1." The EWP was developed to

meet this commitment. According to the CALFED ROD, representative ERP actions related to the EWP include:

- acquiring water from willing sellers throughout the Bay-Delta watershed to provide flows and habitat conditions for fishery protection and recovery (page 19);
- restoring critical instream and channel-forming flows in Bay-Delta tributaries (page 19); and
- improving salmon spawning and juvenile survival in upstream tributaries as defined by the ERP, and Strategic Plan, by purchasing up to 100 TAF per year by the end of Stage 1 (page 36).

THE ENVIRONMENTAL WATER PROGRAM

In 1998, the Secretary of Interior allocated money from the federal Bay-Delta Act for environmental water acquisitions. The concept of the EWP was presented to the Ecosystem Roundtable, a stakeholder advisory committee to the ERP, in 2000. Based on comments received from stakeholders, in November 2000 an informal EWP Steering Committee was formed, composed of a large group of stakeholders representing diverse interests. During 11 meetings, the Steering Committee helped to establish goals and objectives for the EWP, to decide that initial implementation of the EWP should be through a series of pilot water acquisition, and to develop a process to set priorities for this first round of acquisitions. When the charter for the Bay-Delta Advisory Committee expired, the work of the Steering Committee ended also, but with the creation of the Bay-Delta Public Advisory Committee (BDPAC) in June 2001, work was taken over by the BDPAC Ecosystem Restoration Subcommittee. Notes for each meeting of the Steering Committee are available on the EWP website at: www.CALFEDEWP.org.

During the review of these priority recommendations, the Agency Stakeholder Ecosystem Team (ASET) expressed concern that the program needed to be implemented as a series of adaptive management experiments that would simultaneously allow implementation of actions believed to improve habitat and maximize learning about ecological and geomorphic processes. Later that year, CALFED sponsored a scientific forum on implementing large-scale adaptive management experiments, including a section on high-flow geomorphic experiments. More discussion of this workshop and its effect on the EWP is presented below under Section 5, "Science and Adaptive Management." As a result, the guiding principles of the EWP have been expanded to require a peer-reviewed science and adaptive management program that includes conceptual models, testable hypotheses, and monitoring for each project. The EWP also has been broadened to include flow experiments related to direct biological benefits (e.g., migration and habitat) and experiments concerning the relationship between high flows and geomorphic processes.